OHS00140

SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MDL INFORMATION SYSTEMS, INC.
1281 Murfreesboro Road, Suite 300
Nashville, TN 37217-2423
1-615-366-2000

EMERGENCY TELEPHONE NUMBER:
1-800-424-9300 (NORTH AMERICA)
1-703-527-3887 (INTERNATIONAL)

SUBSTANCE: ACETONE

TRADE NAMES/SYNONYMS:
2-PROPANONE; DIMETHYLFORMALDEHYDE; DIMETHYL KETONE; BETA-KETOPROPANE; METHYL KETONE; PROPANONENE; PYROACETIC ETHER; RCRA U002; UN 1090; C3H6O; OHS00140; RTECS AL3150000

CHEMICAL FAMILY: ketones, aliphatic

CREATION DATE: Sep 06 1984
REVISION DATE: Mar 18 2002

SECTION 2 COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: ACETONE
CAS NUMBER: 67-64-1
EC NUMBER (EINECS): 200-662-2
EC INDEX NUMBER: 606-001-00-8
PERCENTAGE: 100.0

SECTION 3 HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=3 REACTIVITY=0

EMERGENCY OVERVIEW:
COLOR: colorless
PHYSICAL FORM: volatile liquid
ODOR: minty, sweet odor
MAJOR HEALTH HAZARDS: respiratory tract irritation, skin irritation, eye irritation, central nervous system depression
PHYSICAL HAZARDS: Extremely flammable liquid and vapor. Vapor may cause flash fire.

POTENTIAL HEALTH EFFECTS:
INHALATION:
SHORT TERM EXPOSURE: irritation, changes in body temperature, nausea, vomiting, stomach pain, difficulty breathing, irregular heartbeat, headache, drowsiness, dizziness, difficulty speaking, loss of coordination, kidney damage, liver damage, unconsciousness
LONG TERM EXPOSURE: irritation, changes in body temperature, headache, drowsiness, dizziness, blood disorders
SKIN CONTACT:
SHORT TERM EXPOSURE: irritation
LONG TERM EXPOSURE: irritation, tingling sensation
EYE CONTACT:
SHORT TERM EXPOSURE: irritation
LONG TERM EXPOSURE: irritation
INGESTION:
SHORT TERM EXPOSURE: nausea, vomiting, diarrhea, internal bleeding, kidney damage, liver damage, unconsciousness
LONG TERM EXPOSURE: no information on significant adverse effects

CARCINOGEN STATUS:
OSHA: No
NTP: No
IARC: No

SECTION 4 FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

EYE CONTACT: Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

NOTE TO PHYSICIAN: For ingestion, consider gastric lavage and activated charcoal slurry.

SECTION 5 FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Severe fire hazard. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Vapor/air mixtures are explosive.

EXTINGUISHING MEDIA: alcohol resistant foam, carbon dioxide, regular dry chemical, water

Large fires: Use alcohol-resistant foam or flood with fine water spray.

FIRE FIGHTING: Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Evacuation radius: 800 meters (1/2 mile). Water may be ineffective.

FLASH POINT: -4 F (-20 C) (CC)
LOWER FLAMMABLE LIMIT: 2.5%
UPPER FLAMMABLE LIMIT: 13%
AUTOIGNITION: 869 F (465 C)
FLAMMABILITY CLASS (OSHA): IB

SECTION 6 ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:
Avoid heat, flames, sparks and other sources of ignition. Remove sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray. Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

SECTION 7 HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106.

Grounding and bonding required. Keep separated from incompatible substances.

SECTION 8 EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:
ACETONE:
1000 ppm (2400 mg/m3) OSHA TWA
750 ppm (1780 mg/m3) OSHA TWA (vacated by 58 FR 35338, June 30, 1993)
1000 ppm (2375 mg/m3) OSHA STEL (vacated by 58 FR 35338, June 30, 1993)
500 ppm ACGIH TWA
750 ppm ACGIH STEL
250 ppm (590 mg/m3) NIOSH recommended TWA 10 hour(s)
1200 mg/m3 (500 ml/m3) DFG MAK (peak limitation category - I, with excursion factor of 2)
1210 mg/m3 (500 ppm) EC MAK TWA
750 ppm (1810 mg/m3) UK OES TWA
1500 ppm (3620 mg/m3) UK OES STEL

MEASUREMENT METHOD: Charcoal tube; Carbon disulfide; Gas chromatography with flame ionization detection; NIOSH IV # 1300, Ketones I

VENTILATION: Provide local exhaust ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

PROTECTIVE MATERIAL TYPES: butyl rubber, chlorinated polyethylene, Silver Shield(R), Teflon(R)

RESPIRATOR: The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.
2500 ppm
Any chemical cartridge respirator with organic vapor cartridge(s).
Any powered, air-purifying respirator with organic vapor cartridge(s).
Any air-purifying respirator with a full facepiece and an organic vapor canister.
Any supplied-air respirator.
Any self-contained breathing apparatus with a full facepiece.
Escape -

Any air-purifying respirator with a full facepiece and an organic vapor canister.
Any appropriate escape-type, self-contained breathing apparatus.
For Unknown Concentrations or Immediately Dangerous to Life or Health -
Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.
Any self-contained breathing apparatus with a full facepiece.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: liquid
APPEARANCE: clear
COLOR: colorless
PHYSICAL FORM: volatile liquid
ODOR: minty, sweet odor
TASTE: sweet taste
MOLECULAR WEIGHT: 58.08
MOLECULAR FORMULA: C-H3-C-(O)-C-H3
BOILING POINT: 133 F (56 C)
FREEZING POINT: -139 F (-95 C)
VAPOR PRESSURE: 180 mmHg @ 20 C
VAPOR DENSITY (air=1): 2.0
SPECIFIC GRAVITY (water=1): 0.7899
WATER SOLUBILITY: soluble
PH: Not available
VOLATILITY: 100%
ODOR THRESHOLD: 20 ppm
EVAPORATION RATE: 6 (butyl acetate=1)
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available
SOLVENT SOLUBILITY:
Soluble: alcohol, ether, benzene, chloroform, dimethylformamide, oils

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition.
Containers may rupture or explode if exposed to heat.

INCOMPATIBILITIES: acids, amines, halogens, halo carbons, oxidizing materials, metal salts, peroxides, combustible materials, bases

ACETONE:

ACIDS: Incompatible.
AMINES (ALIPHATIC): Incompatible.
BROMINE: Violent reaction with excess amounts of bromine.
BROMINE TRIFLUORIDE: Explosion on contact.
BROMOFORM: Violent reaction in presence of bases (e.g. Potassium hydroxide).
CHLOROFORM: Violent reaction in presence of a base.
CHROMIUM TRIOXIDE: Ignition on contact at ambient temperature.
CHROMYL CHLORIDE: Incandescent reaction.
DIOXYGEN DIFLUORIDE + SOLID CARBON DIOXIDE: Explosion at -78 C.
HEXACHLOROMELAMINE: Possible explosion.
HYDROGEN PEROXIDE: Explosion.
NITRIC ACID: Ignition.
NITRIC + ACETIC ACID MIXTURE: Possible explosion.
NITRIC + SULFURIC ACID MIXTURE: Violent oxidation.
NITROSYL CHLORIDE: Explosive reaction.
NITROSYL PERCHLORATE: Ignition and explosion.
NITRYL PERCHLORATE: Ignition and explosion.
OXIDIZERS (STRONG): Fire and explosion hazard.
PERMONOSULFURIC ACID: Explosion.
PLASTICS: Incompatible.
PLATINUM + NITROSYL CHLORIDE: Possible explosion.
POTASSIUM-TERT-BUTOXIDE: Ignition.
RAYON: Incompatible.
SODIUM HYPOBROMITE: Explosion.
SODIUM HYPOIODITE: Possible explosion.
SULFUR DICHLORIDE: Violent reaction.
SULFURIC ACID AND POTASSIUM BICHROMATE: Ignition.
THIODIGLYCOL + HYDROGEN PEROXIDE: Possible explosion.
THIOTRIAZYL PERCHLORATE: Possible explosion.
1,1,1-TRICHLOROETHANE: Exothermic condensation by a basic catalyst.
TRICHLOROMELAMINE: Possible explosion.
See also KETONES.

KETONES:
ACETALDEHYDE: Violent condensation reaction.
NITRIC ACID + HYDROGEN PEROXIDE: Formation of explosive product.
PERCHLORIC ACID: Violent decomposition.

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: oxides of carbon

POLYMERIZATION: Will not polymerize.

SECTION 11 TOXICOLOGICAL INFORMATION

ACETONE:

IRRITATION DATA:
500 ppm eyes-human; 395 mg open skin-rabbit mild; 500 mg/24 hour(s) skin-rabbit mild; 20 mg eyes-rabbit severe; 20 mg/24 hour(s) eyes-rabbit moderate
TOXICITY DATA:
2857 mg/kg oral-man TDLo; 2857 mg/kg oral-man TDLo; 440 ug/m3/6 minute(s) inhalation-man TCLo; 10 mg/m3/6 hour(s) inhalation-man TCLo; 500 ppm inhalation-human TCLo; 12000 ppm/4 hour(s) inhalation-man TCLo; 1159 mg/kg unreported-man LDLo; 5800 mg/kg oral-rat LD50; 50100 mg/m3/8 hour(s) inhalation-rat LC50; 500 mg/kg intraperitoneal-rat LDLo; 5500 mg/kg intravenous-rat LD50; 3 gm/kg oral-mouse LD50; 44 gm/m3/4 hour(s) inhalation-mouse LC50; 1297 mg/kg intraperitoneal-mouse LD50; 4 gm/kg intravenous-mouse LDLo; 8 gm/kg oral-dog LDLo; 8 gm/kg intraperitoneal-dog LDLo; 5 gm/kg subcutaneous-dog LDLo; 5340 mg/kg oral-rabbit LD50; 20 ml/kg skin-rabbit LDLo; 1576 mg/kg intravenous-rabbit LDLo; >9400 ul/kg skin-guinea pig LD50; 5 gm/kg subcutaneous-guinea pig LDLo; 273 gm/kg/13 week(s) continuous oral-rat TDLo; 19000 ppm/3 hour(s)-8 week(s) intermittent inhalation-rat TCLo; 199 mg/m3/8 hour(s)-45 day(s) intermittent inhalation-rat TCLo; 546 gm/kg/13 week(s) continuous oral-mouse TDLo
CARCINOGEN STATUS: ACGIH: A4 -Not Classifiable as a Human Carcinogen
LOCAL EFFECTS:
Irritant: inhalation, skin, eye
ACUTE TOXICITY LEVEL:
Slightly Toxic: inhalation, ingestion
TARGET ORGANS: central nervous system
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: respiratory disorders, skin disorders and allergies
MUTAGENIC DATA:
sex chromosone loss and non disjunction - Saccharomyes cerevisae 47600 ppm; cytogenetic analysis - hamster fibroblast 40 gm/L
REPRODUCTIVE EFFECTS DATA:
273 gm/kg oral-rat TDLo 13 week(s) male; 31500 ug/m3 inhalation-mammal TCLo/24 hour(s) 1-13 day(s) pregnant female continuous
ADDITIONAL DATA: Alcohol may enhance the toxic effects.

HEALTH EFFECTS:
INHALATION:
ACUTE EXPOSURE:
ACETONE: Vapor concentrations around 1000 ppm may cause slight transient irritation of the upper respiratory tract. Exposure to 12,000 ppm has caused throat irritation and central nervous system depression with weakness of the legs, headache, dizziness, drowsiness, nausea and a general feeling of malaise. Other possible effects from exposure to high concentrations include dryness of the mouth and throat, incoordination of motion and speech, restlessness, anorexia, abdominal pain, vomiting, sometimes followed by hematemesis, hypothermia, dyspnea, slow, irregular respiration, slow, weak pulse, progressive collapse with stupor, and in severe cases, coma. Liver damage may be indicated by high urobilin levels

and jaundice. Kidney damage may be indicated by albumin and red and white blood cells in the urine. Blood glucose levels may be affected and fatal ketosis is possible.

CHRONIC EXPOSURE:
ACETONE: Workers exposed to 500 ppm/6 hours/6 days experienced mucous membrane irritation, an unpleasant smell, heavy eyes, overnight headache, and general weakness accompanied by hematologic changes. Recovery occurred in several days. Workers exposed to 1000 ppm for 3 hours/day for 7-15 years reported chronic inflammation of the respiratory tract, stomach and duodenum, dizziness, loss of strength, and asthenia. Drowsiness, vertigo, sensation of heat, and coughing have also been reported from chronic exposure to low concentrations. Reproductive effects have been reported in rats and mice at maternally toxic doses. Pregnant female rats were exposed to 0, 440, 2200 or 11,000 ppm of acetone for 6 hours/day on days 6-19 of gestation and female mice were exposed to 0, 440, 2200 or 6600 ppm acetone on days 6-17 gestation. Effects on the offspring (reduced weight gain) were seen at maternally toxic doses.(NIEHS)

SKIN CONTACT:
ACUTE EXPOSURE:
ACETONE: Contact with the liquid caused mild irritation in rabbits. Cellular damage to the outer layers of the epithelium with mild edema and hyperemia has been demonstrated in humans, but was readily reversible. Small amounts may be absorbed through intact skin.

CHRONIC EXPOSURE:
ACETONE: Repeated or prolonged exposure may cause dermatitis with drying, cracking, and erythema due to the defatting action accompanied by persistent paresthesia of the fingers. The amount absorbed through the skin increases directly with the frequency and extent of the exposure.

EYE CONTACT:
ACUTE EXPOSURE:
ACETONE: In humans, vapors produce only slight irritation when the concentration is at or below 1000 ppm. However, high vapor concentrations have caused corneal epithelial and conjunctival injury in animals. Liquid splashed in human eyes causes an immediate stinging sensation and, if washed promptly, damage only to the corneal epithelium characterized by microscopic gray dots and a foreign body sensation, which heals completely in 1-2 days.

CHRONIC EXPOSURE:
ACETONE: Prolonged or repeated exposure to the vapors may cause irritation or conjunctivitis.

INGESTION:
ACUTE EXPOSURE:

ACETONE: May cause a fruity odor of the breath and mucous membrane and gastroenteric irritation. In acute cases, a latent period may be followed by restlessness, diarrhea, nausea and vomiting proceeding to hematemesis and progressive collapse with stupor. Hepatorenal lesions have been reported. The blood glucose level may be affected and ketosis may be fatal. 10-20 milliliters have been tolerated without ill effects. Large amounts have produced lethargy, pharyngeal and soft palate erosions and erythema. 200 milliliters have caused stupor within a half hour, flushed cheeks, shallow respiration, and coma which lasted for 12 hours. Renal glucosuria persisted for 5 months.

CHRONIC EXPOSURE:

ACETONE: Rats administered 25,000 ppm in their drinking water for 14 days showed depressed growth, fluid intake and feed consumption. Rats given 100,000 ppm showed mild debilitation, depressed weight gain, emaciated appearance, and bone marrow hyperplasia. Male rats in 13 week studies developed depressed sperm motility and caudal and epididymal weights, an increased incidence of abnormal sperm and nephropathy. Rats developed anemia and splenic pigmentation (hemosiderosis) at levels of 20,000 and 50,000 ppm. In both the 14 day and 13 week studies, mice developed centrilobular hepatocellular hypertrophy.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY DATA:

FISH TOXICITY: 4 ug/L 96 hour(s) LC50 (Mortality) Harlequinfish, red rasbora (Rasbora heteromorpha)

INVERTEBRATE TOXICITY: 35 ug/L 48 hour(s) EC50 (Immobilization) Water flea (Daphnia pulex)

ALGAL TOXICITY: <14 ug/L 11-14 hour(s) MATC (Growth) Red algae (Champia parvula)

OTHER TOXICITY: 0.21 ug/L 96 week(s) LC50 (Mortality) Frog (Rana hexadactyla)

FATE AND TRANSPORT:

BIOCONCENTRATION: 100000 ug/L 32 hour(s) BCF (Residue) Fathead minnow (Pimephales promelas) 4.3 ug/L

ENVIRONMENTAL SUMMARY: Highly toxic to aquatic life.

SECTION 13 DISPOSAL CONSIDERATIONS

Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): U002. Dispose in accordance with all applicable regulations.

SECTION 14 TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
- PROPER SHIPPING NAME: Acetone
- ID NUMBER: UN1090
- HAZARD CLASS OR DIVISION: 3
- PACKING GROUP: II

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
- SHIPPING NAME: Acetone
- ID NUMBER: UN1090
- CLASSIFICATION: 3
- PACKING GROUP: II

LAND TRANSPORT ADR/RID:
- PROPER SHIPPING NAME: Acetone
- UN NUMBER: UN1090
- ADR/RID CLASS: 3
- CLASSIFICATION CODE: F1
- PACKING GROUP: II

AIR TRANSPORT IATA/ICAO:
- PROPER SHIPPING NAME: Acetone
- UN/ID NUMBER: UN1090
- IATA/ICAO CLASS: 3
- PACKING GROUP: II

MARITIME TRANSPORT IMDG:
- PROPER SHIPPING NAME: Acetone
- UN NUMBER: UN1090
- IMDG CLASS: 3
- PACKING GROUP: II

SECTION 15 REGULATORY INFORMATION

U.S. REGULATIONS:
- CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
  - ACETONE: 5000 LBS RQ

- SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30):

Not regulated.

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.40):
Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):
ACUTE: Yes
CHRONIC: No
FIRE: Yes
REACTIVE: No
SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65): Not regulated.

OSHA PROCESS SAFETY (29CFR1910.119): Not regulated.

STATE REGULATIONS:
California Proposition 65: Not regulated.

CANADIAN REGULATIONS:
WHMIS CLASSIFICATION: Not determined.

EUROPEAN REGULATIONS:
EC CLASSIFICATION (ASSIGNED):
F Highly Flammable
Xi Irritant

EC Classification may be inconsistent with independently-researched data.

DANGER/HAZARD SYMBOL:
F Highly Flammable
Xi Irritant

EC RISK AND SAFETY PHRASES:

R 11	Highly flammable.
R 36	Irritating to eyes.
R 66	Repeated exposure may cause skin dryness or cracking.
R 67	Vapors may cause drowsiness and dizziness.
S 2	Keep out of reach of children.
S 9	Keep container in a well-ventilated place.
S 16	Keep away from sources of ignition - No smoking.
S 26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

GERMAN REGULATIONS:
WATER HAZARD CLASS (WGK):
STATE OF CLASSIFICATION: VwVwS

CLASSIFICATION UNDER HAZARD TO WATER: 0

NATIONAL INVENTORY STATUS:
U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION:
ACETONE
CAS NUMBER: 67-64-1
SECTION 4

SECTION 16 OTHER INFORMATION

MSDS SUMMARY OF CHANGES
SECTION 8 EXPOSURE CONTROLS, PERSONAL PROTECTION